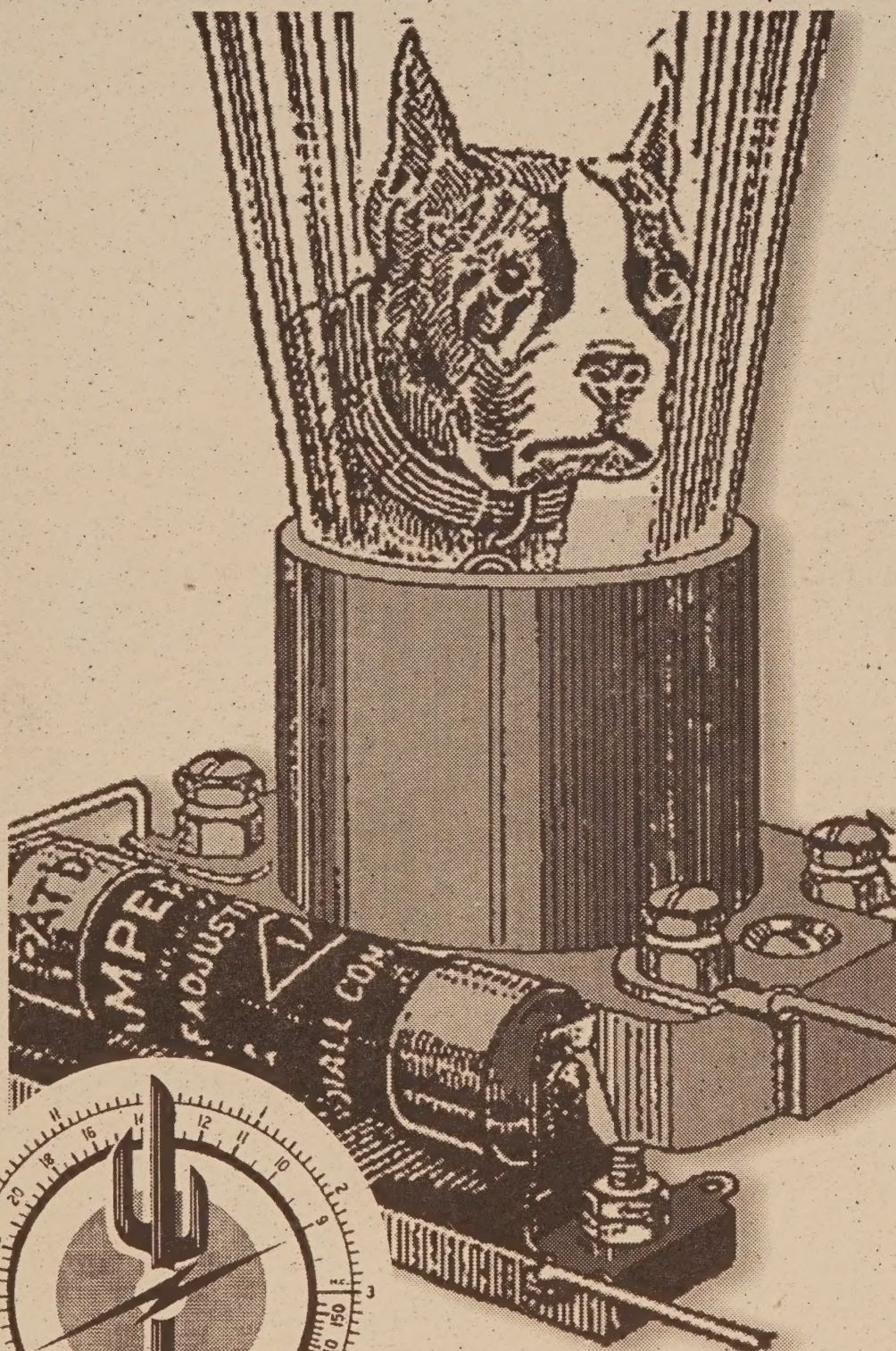


ARIZONA ANTIQUE RADIO CLUB NEWS



Vol XVI, No 2 Summer 1999

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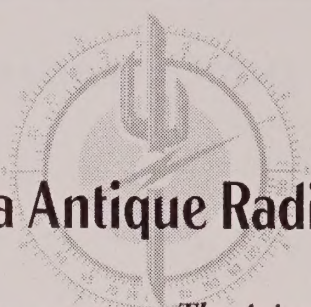
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ARIZONA ANTIQUE RADIO CLUB NEWS

Vol XVI, No 2 Summer 1999



Arizona Antique Radio Club

The Arizona Antique Radio Club was organized in 1983 for the preservation of the history and artifacts of radio and television, and for the advancement of knowledge and appreciation of radio technology and communication. The Club is a non-profit corporation organized primarily for the mutual assistance of radio devotees and collectors in Arizona. Membership, however, is open to any persons who have an interest in radio and television history, preservation, restoration, and collecting.

Meetings are held from October through May and consist of touring collections, presentations of technical, historical or restoration information, thematic displays of radios and the autobiographical experiences of the members. Our antique radio Swap Meets are usually scheduled for Spring and Fall meetings. Members of the Board of Directors are elected at the annual business meeting in May. Most meetings are held on Saturdays in the Phoenix and Tucson areas, and when possible, elsewhere within Arizona.

Membership dues are \$18 (individual) or \$20 (family) per calendar year and provide access to all club benefits including the quarterly issues of the *Radio Club News*. Send dues or membership inquiries to: **Arizona Antique Radio Club, 10513 E. Clinton, Scottsdale, AZ, 85259, phone (602) 860-8951.**

1999-2000 Club Officers

President: Dave Lambert 775-0531
Vice-President: Corrine Wiltsie 357-8954
Secretary: Dennis Craft 860-8951
Treasurer: Steve Smith 831-3095
Editor: Bill Lettow 730-6058

Additional Directors:

Martin Bergan 274-5895
 David Cain 561-6228
 Con Morton 996-8912

The Arizona Antique Radio Club News is the quarterly publication of the Arizona Antique Radio Club, Inc. It is mailed First Class to current members at the beginning of March, June, September and December.

Contributions: submission of articles, news items, fiction, photographs and other materials relating to radio history and collecting are greatly appreciated, particularly if they have an Arizona connection. All members are encouraged to broaden their interest in the hobby by sharing their experiences, opinions, knowledge and observations with the club through its publication. Send materials for publication to **Arizona Antique Radio Club, 2025 E. LaJolla Dr., Tempe, Arizona, 85282-5910. Phone is (480) 730-6058. Email: lettow@yahoo.com.**

Advertising: classified ads of reasonable length are free to members. Display advertising is also available, contact editor for current rates. Deadlines are the 10th of the month before publication. The club accepts no responsibility for transactions made in regards to published ads.

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 Bob Reek
Editor: Bill Lettow



A.A.R.C. NEWS

Meeting Reviews, Updates and Club Calendar

APRIL MEETING **LOUDSPEAKERS WITH CARL ROBERTS**

Our April the 3rd meeting in Phoenix was an historical overview of loudspeakers by Carl Roberts, club member and principal of Speakerworks. Carl brought a large array of examples from early horns to the latest high tech creations. Carl has worked anlong side, and is familiar with many of the famous names in hi-fi speaker design over the past 50 years, and he didn't pull any punches when evaluating the various designs over that time.

Club members also brought speakers for a show and tell (see meeting pictures on page 21.) Carl's main point was that despite many changes and refinements in speaker technology, particularly in the use of new materials, the basic design hasn't changed much from radio's early days. And he proved that some "hi-tech" designs weren't so new after all!

Thanks to Carl, and Corinne Wiltsie for a great meeting. And if you should see Carl don't mention Bose!

MAY / ANNUAL BUSINESS MEETING **LEW McCOY REMEMBERS**

We had a very special meeting on May 15th in Scottsdale with a talk by Lew McCoy, the nationally known ham antenna expert, longtime ARRL staff member, author, new Mesa resident and newlywed! We heard "the tip of the iceberg" of Lew's vast experiece and wealth of stories, all entertainingly and humorously told.

Among many other projects, Lew was involved in a national education campaign for hams on television interference, during the time that television ownership was taking off in the 1950s.

We had elections to fill three Board of Directors positions. Elected to a new two year term was Martin Bergan. Re-elected to two year terms were Bill Lettow and Steve Smith.

MEMBER UPDATES

Former club member Ed Eddy of Tempe passed away on May 5. Ed was a ham and he collected Zenith Trans-Oceanics and other radios.

We received a letter from John Huether, son of Honorary Life Member George Huether, reporting that George is doing fine at a care center in Jasper, Indiana. He is in very good spirits, has a Swan radio set up in his room and often talks of his friends in the club. His new address is Northwood Good Samaritan Care Center, room 207, 2515 Newton St., Jasper, IN 47546.

Jim Kelly has moved to Florida. We'll miss him and the good stuff he always brought to swap meets.

Pearl Payne is doing well after a setback this winter that had husband Bernie driving them both back to Canada for medical care when they are normally enjoying the cloudless skies of Arizona.

CLUB FINANCES

Thanks to a generous gift from Martin Bergan, and other gifts from Al Jones and the brothers of John Sabo, our treasury seems to have survived another year. We are most grateful for these gifts.

Remember the treasury mainly depends on your membership dues. This is our "bread and butter" money so please try to find new members for the club. Or if you know people whose memberships have expired, urge them to rejoin. We have spare issues of the *Radio Club News* available to send to interested persons.

NEW QSL REPOSITORY

The club received a press release from the Broadcast Pioneers Library of American Broadcasting in College Park, Maryland announcing that the

library is the new home of a 30,000 piece collection of QSLs. They were placed there by the Committee to Preserve Radio Verifications, a national group whose aim is to locate and preserve old QSLs. The committee is seeking donations of QSLs and QSL collections so that this important part of radio history is not lost. For information on this program, or on the Broadcast Pioneers Library, contact the Editor.

THE NEWS FROM ROME

In a letter postmarked Rome, Italy, comes the announcement that a new website devoted to the selling of "international selected-epoch radios" is now online. The address is www.collezionista.com.

What Scottsdale resident has every Grebe radio ever made, (all in perfect mint condition) and never has to dust his collection? It's Lance Wilson and his virtual Grebe collection at www.webcom.com/lwilson/.

BOARD MEETINGS

The Board of Directors met in July and August and elected Dave Lambert as AARC President, Corinne Wiltsie as Vice-President, Steve Smith as Treasurer, Dennis Craft as Secretary and Bill Lettow as Editor for the 1999-2000 year.

Steve presented the annual treasurer's report showing us "in the black" with a moderate surplus of funds - but he noted that memberships dues are still covering only about 90% of the club's financial needs.

The Board also discussed the new years schedule, which follows.

1999-2000 TENTATIVE CALENDAR OF EVENTS

PLEASE NOTE: all information is tentative. Many details have not been finalized. We will be updating this list as the year progresses, both in the *Radio Club News*, and in special mailings. Note also that we need help from you for several of these events.

POT-LUCK and NEW YEAR KICK-OFF

Saturday, October 2, 4pm; Home of Cal Lidback, 440 S. 31st St, Mesa

Kick off the new year with a pot-luck dinner and get-together for all members and their significant others. New members are especially invited. We will have a series of short talks geared for the new collector. Bring examples of the type of radio you collect. Contact: Dave Lambert.

FALL SWAP MEET

Saturday, November 6, 8am; Antique Electronic Supply, Tempe.

Fall Swap Meet, Auction and Lunch. We need quality auction items, and would welcome donated items to be auctioned for the benefit of the club. Contact: Corrine Wiltsie.

TUBES, TUBE TESTERS and TESTING

Saturday, December 4, 1pm; location to be announced.

Tubes, how to test them, tube test equipment, signing party for George A. Fathauer's new book.

RADIO ROUNDUP

Saturday, January 8, 2000, 1pm; location to be announced.

This years theme: Bakelite. Bring radios, TVs, parts, accessories, etc. Only the real thing - no plastics, catalins, tenite, etc. Contest and awards. Y2K compliance assured.

SPRING SWAP MEET

Saturday, February 5, 8am; Dave's Antique Radios, Tucson. Contact: Steve Smith.

HAMFEST

Saturday, March ??, ??am; At the Hamfest at Scottsdale Community College.

Plans are to have a club radio display, and cluster antique radio sellers together. We want to set up an antique broadcast station for the meet. We need help with equipment and expertise to do this. Contact: Con Morton.

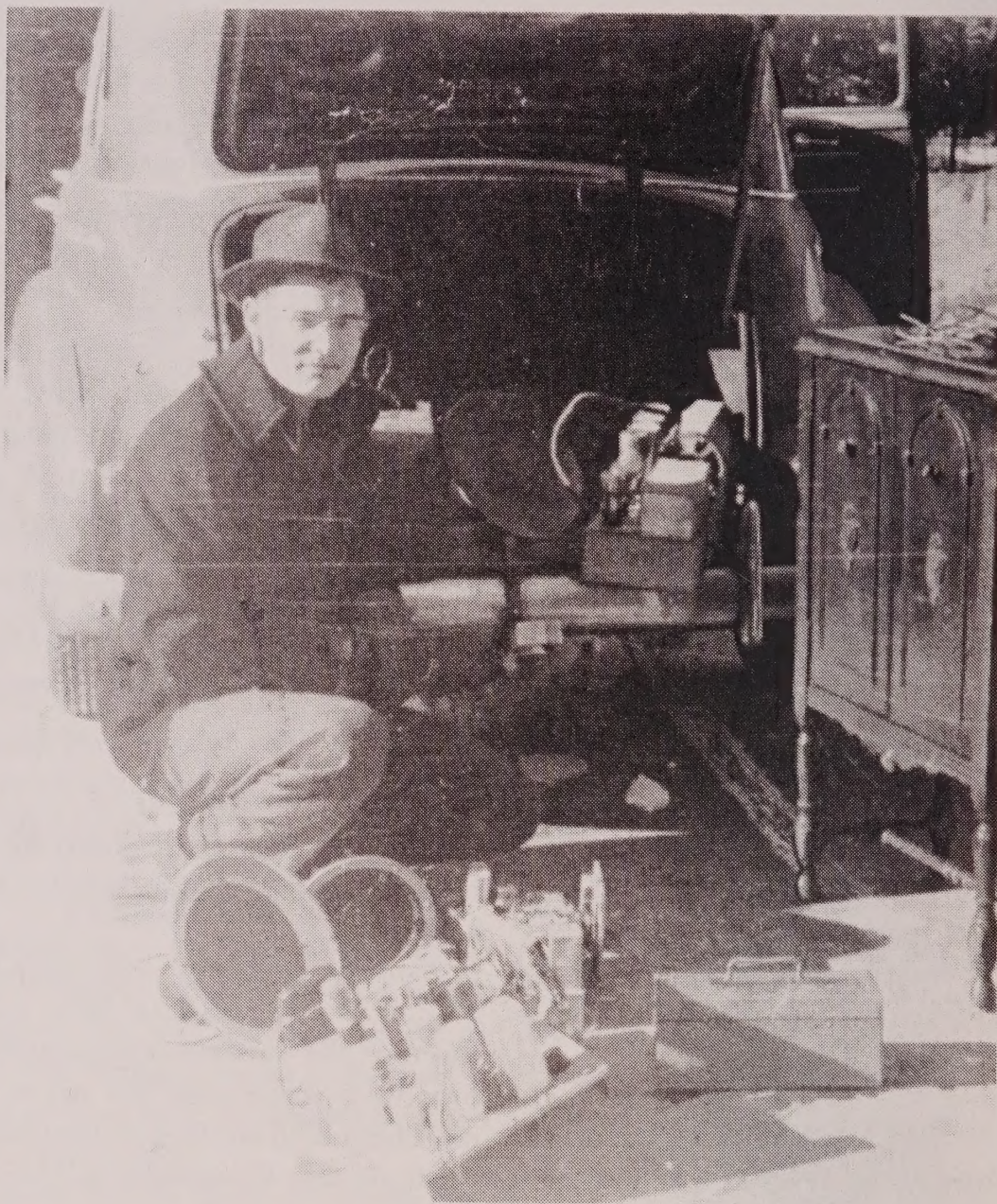
BROADCASTING RADIO PROGRAMS RADIO PREMIUMS

Saturday, April 1, 1pm; location to be announced.

We need help putting together a meeting on the above topics. Please contact club officers if you have something to share in this area.

LAST MEETING OF THE SEASON

Saturday, May 6, 1pm; location to be announced.



Music Appreciation

The above picture, taken about 1943, shows me behind the open trunk of our 1941 Chevrolet at our home in Maywood, Illinois with the innards of several old console radios and a complete Majestic console which belonged to Roosevelt elementary school in nearby Broadview. At the time, I was a student at Illinois Institute of Technology (IIT) studying Electrical Engineering, and I repaired radios as a sideline business.

by Bob Reek

This old Majestic radio played a part in my life, because a few years earlier I was a student at the same Roosevelt school. As I recall, when I was in the fifth or sixth grade (1934 or 35), our class was herded down to the gymnasium each week along with other classes to listen to classical music programs directed by Walter Damrosch.

Walter Damrosch (1862-1950), born in Germany, was a composer and a symphony orchestra conductor in New York City from the 1880s to the early 1940s. He directed the NBC Symphony Orchestra in the 1930s and was an early pioneer of broadcast concerts.

We sat in hard-bottomed folding chairs in long rows, trying to amuse ourselves for a boring half-hour (it seemed much longer at the time). I remember learning how to crack my knuckles, amid other hand and finger tricks. The teachers were kept busy trying to keep order and quiet among one hundred active, healthy, children so we could hear the wonderful classical music we were supposed to be appreciating. We kids hated it. It didn't help that Walter spoke with a thick German accent which was easily mimicked by several of us kids with predictable hilarious and noisy reaction from the others.

It took many years for this "forced feeding" of classical music to recede in my memory to the point where I now can enjoy most of it.

I remember thinking as I repaired the old radio, "I wonder if the kids are still forced to listen to Walter Damrosch? Maybe I should tell the school that it can't be repaired." ①

CUSTOMER'S RECEIPT

JOB NO. _____ **Date** _____

Your Radio has been accepted by us for repairs and we guarantee to give it our expert attention.

Radio _____ **Model or Serial** _____

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Will Call _____

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SET OWNER'S WARRANTY

JOB NO. _____ **KEEP THIS WITH RADIO**

Owner _____

Street _____

City _____

Date Job Accepted _____ **Delivered** _____

Radio _____ **Model or Serial** _____

NUMBER AND CONDITION OF TUBES

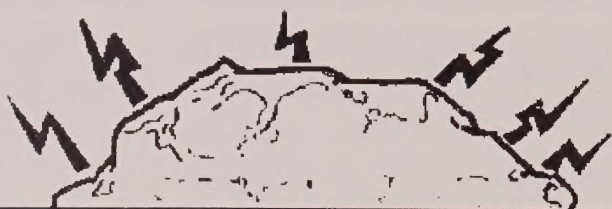
Good _____ **Bad** _____ **Doubtful** _____

ROBERT J. REEK
1608 S. 9th Ave.
Maywood, Illinois
Maywood 2593-M

We Guarantee Sylvania Radio Tubes

JOB RECORD NO. _____

Signature _____	Owner's Name _____	Phone No. _____
(Customer's Signature)	Street _____	Date Accepted _____
	City _____	Date Delivered _____
	Radio _____	Model or Serial _____
	Complaint _____	
	Tubes and Material Replaced, Itemized on Reverse Side _____	
Check-up Service _____		
Repair Service _____		
Alignment Service _____		
	Total \$ _____	
	Sales Tax \$ _____	
	Grand Total \$ _____	



Minerals for Crystal Detectors: Some Properties of the Top Twenty

by P. A. Kinzie

Present day crystal sets use a germanium diode for dependability and convenience, or a galena crystal with adjustable catwhisker as a novelty or for hobbyist experiments. What is often overlooked is the fact that a wide variety of materials exist that can be used with a catwhisker to rectify radio frequency signals. These are a source of interesting specimens for detector experiments. Many crystal compositions date back to investigations made during the wireless era. Several survived in a limited way until the advent of the solid state diode, and one small company was advertising a few types until very recently. In the form of raw stock, the picture is quite different: a wide selection of materials is readily available, which can be easily prepared for use.

Minerals are an especially interesting type of crystal rectifier to work with. There is something intriguing about being able to detect a radio signal using nothing more than a natural untreated ore sample from a mine. Of course most of us find it impractical to go direct to the source, but good mineral samples are readily available from rock shops and mail order suppliers.

There is remarkably little information available to help in selecting min-

erals to test. A great deal of work was done in the early 1900s, but typical results are qualitative and hard to interpret. The convenient and affordable measuring instruments of today were not in existence. Also, comparisons with present day specimens are not too significant, since they may originate at mines which were not then in existence. In fact, some minerals were not even well known at that time. These considerations make new experimentation even more attractive. After all, there may be something out there that is even better than galena.

I have tested 61 different minerals so far, with widely varying results, ranging from a sensitivity comparable with galena down to zero. The best results are shown in Table 1, which gives the relative sensitivity, Sr, for 20 different minerals, using a simple measurement technique. This compares crystal detector output with a 1N34A germanium diode, used as a standard. Both are measured under the same receiving conditions, and Sr is calculated as the ratio of the crystal voltage output to the diode output.

As an example, an Sr of 0.7 means that the specimen voltage is 0.7 or 70% of the diode voltage.

A sensitivity of 0.7 signifies that the crystal detector output is about the

Table 1: High Sensitivity Crystals - The top twenty minerals

No.	Name	Composition	S _r ¹	No.	Name	Composition	S _r ¹
1	Galena	PbS	1.05	11	Bornite	Cu ₅ FeS ₄	-0.70
2	Galena, Steel	(Pb,Ag)S	1.00	12	Chalcopyrite	CuFeS ₂	0.65
3	Niccolite	NiAs	1.00	13	Cobaltite	CoAsS	0.63
4	Chalcocite	Cu ₂ S	0.96	14	Enargite	Cu ₃ AsS ₄	0.57
5	Molybdenite	MoS ₂	0.96	15	Bismuthinite	Bi ₂ S ₃	-0.50
6	Tetrahedrite	(Cu,Fe) ₁₂ Sb ₄ S ₁₃	-0.94	16	Marcasite	FeS ₂	-0.48
7	Pyrite	FeS ₂	-0.93	17	Sphalerite	(Zn,Fe)S	0.48
8	Pyrrhotite	FeS(S) _x	0.92	18	Brookite	TiO ₂	-0.46
9	Tennantite	(Cu,Fe) ₁₂ As ₄ S ₁₃	-0.88	19	Covellite	CuS	-0.43
10	Pyrargyrite	Ag ₃ SbS ₃	0.83	20	Digenite	Cu _{1.8} S	-0.41

¹Maximum value of relative sensitivity for the polarity shown.

same as the half power level of the diode. The corresponding sound pressure level at the headphones is 3 dB lower for the crystal, compared with the 1N34A standard.

A rough rule—of-thumb states that a sound pressure level change of less than about 3 dB is negligible as far as the human ear is concerned. However, as many hi-fi enthusiasts know, the ear can actually do considerably better. This is especially true for listening to the low signal levels associated with crystal set long distance reception. Small sensitivity differences are noticeable in such cases. Here it seems reasonable to eliminate minerals with a sensitivity of less than about 0.7 for consideration as practical detectors, and to recognize that differences in S_r figures above this level do have some importance.

Sensitivity values in the table are positive or negative, depending upon whether the crystal behaves like a p or n type semiconductor. This does not affect audio output, but it is im-

portant for describing crystal properties. It also affects the use of a small DC bias voltage across the point contact junction, which most crystals require to operate at maximum sensitivity.

Only a few of the 61 minerals which were tested performed well without bias. These are listed in Table 2, and comparison of the two tables reveals the curious fact that all Table 2 minerals except millerite are in the top twenty. Although it is not evident from the previous information, it turns out that millerite is number 21 in order of sensitivity, almost qualifying. In other words, most minerals need bias to perform at their best, yet those that don't need bias perform exceptionally well. More tests may show whether this statement is strictly correct or is only indicative of a trend.

Tables 1 and 2 give maximum sensitivities. For some of these minerals there is also a significant sensitivity of opposite polarity. That is, a search for sensitive spots may reveal both p and

Table 2
Minerals unimproved by use
of bias

Name	S_r
Bismuthinite	-0.50
Galena	1.05
Galena, Steel	1.00
Millerite	-0.40
Pyrargyrite	0.83
Pyrite	-0.93
Sphalerite	0.48

n type junctions. A special case of this property is described in Reference 1, where bipolar conduction can exist at the same junction. In this case, either p or n type behavior can be demonstrated, controlled by the magnitude and polarity of the bias voltage, this type of conductance is exhibited by minerals listed in Table 3.

Junctions where bipolar conductance is present, as shown by output signals, are not usually the same junctions which produce maximum sensitivity. In fact, bipolar activity is typically in terms of low output signals. Even the highest output bipolar junctions, found with pyrargyrite, correspond to positions near the bottom of Table 1. Pyrargyrite is also noteworthy because its sensitivity is not only exceptional for bipolar activity, but is nearly equal in magnitude for signals of either polarity. Wireless period textbooks gave a possible explanation of this effect in terms of nonlinear voltage-current curves. Modern texts more or less ignore the subject when discussing solid state rectification.

Other properties besides sensitivity

and bias requirements have a direct influence upon the usefulness of a crystal. These include instability and drift, which are so seldom encountered with galena as well as solid state devices that they are rarely mentioned nowadays. Some of the minerals in Table 1 are not nearly as outstanding in this respect. Actually, a wide variety of behavior is found, depending upon the particular crystal. Also, location where a crystal originates is important with regard to behavior, and this is true even for galena.

Unfortunately, some crystals with high sensitivities may also be unstable. Niccolite and chalcocite are good examples. Instability is a nuisance and an irritation with these crystals, but it does not reach the level that makes detector applications impractical. The latter condition does occur in some other cases.

Changes of output signal over a period of time greater than a few seconds lead to classification as drift, which covers a variety of signal behavior. The most noticeable type of drift occurs when a signal drops in volume during the first minute or two after a good point contact junction is established. No satisfactory explanation of the effect is known.

Another typical occurrence of drift is a loss of sensitivity overnight or within a day or two, following the exposure of a new crystal surface. The most likely explanation involves surface oxidation, which contaminates the crystal. Some minerals tarnish rapidly upon air exposure with a corresponding decrease in sensitivity, whereas with others the tarnish makes

little difference, showing that in those cases a thin oxide film has no electrical effect.

A still longer term drift may occur over a period of weeks or even months, and early day articles described galena as having this characteristic. The galena which has been tested here does not have that problem. This is also true of steel galena, a variety of galena that is also in Table 1.

Crystals have had a good reputation for their low distortion and noise characteristics for many years. Galena, steel galena, and pyrite have often been singled out as fine mineral examples in this respect. Crystals requiring bias do not always perform as well, although the proper amount of bias voltage often eliminates distortion. Distortion decreases when volume increases, as the bias voltage is raised.

Another condition becomes noticeable with some crystals when bias is too high. If the voltage is raised much beyond the volume maximum, or has reached a region where there is little further change of volume, background noise may become noticeable. This increases with further increase in voltage.

Several rare and peculiar phenomena have been noticed with catwhisker crystals, just one of which is described here as an example.

Specimens of pyrrhotite from two different locations showed unusual

Table 3
Bilateral Conductance at point
contact junctions
Minerals with prominent bilateral
characteristics

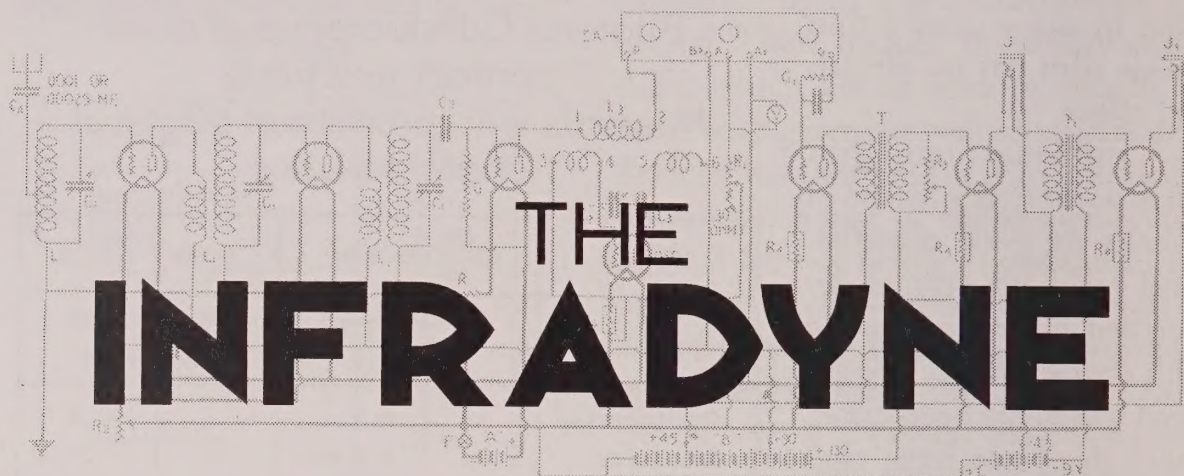
Name	Positive Bias		Negative Bias	
	S _r	Bias [V]	S _r	Bias [V]
Chalcopyrite	-	0.7	-	-0.8
Cobaltite	-	0.3 to 0.5	-	-0.3 to -0.5
Metacinnabar	0.24	0.8	-0.09	-1.2
Pyrolusite	0.37	1.0	-0.24	-1.0
Psilomelane	0.18	0.5	-0.23	-1.0
Pyrargyrite	0.45	1.1	-0.49	-0.6

instability behavior. One exhibited a repetitive condition where a signal was heard when the junction was established, but then immediately dropped out unless bias was present. Behavior of the other specimen was similar, but bias was of no help. Such behavior may occur occasionally with most crystals, but it is unusual to experience this type of response over and over again.

This, as well as much other information, demonstrates that minerals do not necessarily behave the same way as the synthetics used in solid state devices. Simple textbook explanations and performance curves do not give a full description of the effects that may be observed, and there is much left to be learned by experimentation. ☐

Reference:

1. Kinzie, P. A., "Crystal Detector Minerals", *Crys Tech Report No. 11*, April 29, 1999.



BY HARRY HYDER

During the 1920s, only RCA sold superheterodynes, manufactured by General Electric. Westinghouse had bought the Armstrong superheterodyne patent and when Westinghouse joined RCA in 1920, the superheterodyne patent became part of the RCA patent pool, together with those of General Electric and AT&T. Many radio manufacturers bought RCA licenses, but the license did not include the superheterodyne patent until 1930.

A few small companies did manufacture and sell a small number of superheterodynes. RCA had made the decision that if these small company's sales did not exceed \$100,000 per year, RCA would not prosecute them.

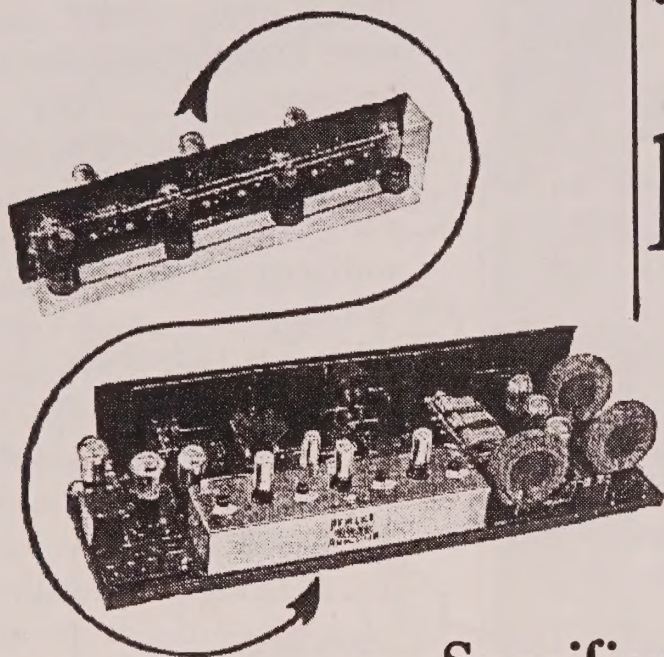
It was legal for an experimenter to build his own superheterodyne, and articles describing them appeared in popular radio magazines. All necessary components were on the market, in-

cluding matched sets of intermediate frequency amplifier transformers. At that time most IF amplifiers operated near 100 kHz lower.

The Infradyne was first described in 1926 and generated a lot of interest. Its most novel feature was that the intermediate frequency amplifier operated at a frequency higher than the broadcast range, rather than lower. One reason for this, according to the designer, was that sets with low frequency IF amplifiers frequently were interfered with by highpower, low frequency government and commercial stations. The Infradyne's IF amplifier operated at 3490 kHz.

The designer of the set was E.M.Sargent. Later, in the 1930s, Sargent was a manufacturer of amateur communication receivers.

The Infradyne was not a manufactured receiver nor a kit. Most of the parts were standard. The one unique



New Remler Infradyne Amplifier

Specified by Sargent *for the* Infradyne Receiver

THE REMLER No. 700 Infradyne Amplifier is a product of advanced radio research. It retains every advantage of multi-tube amplification at a fixed frequency and eliminates undesirable features present in other receivers of this general type.

All parts are made and assembled with the same care and precision which have marked REMLER items since their inception.

Inductance Coils and Condensers are designed and constructed to meet the exact requirements of this circuit. REMLER New and Improved Sockets insure absolutely clean and positive tube contacts. Maximum efficiency of operation is obtained by scientific arrangement of parts and wiring, which prevents energy leakage.

Controls are substantially mounted on a Bakelite panel. The Amplifier is enclosed in a polished and lacquered copper case, which acts as an effective shield, thus eliminating direct signal pick-up by the transformer windings.

E. M. Sargent's Infradyne article, reprinted from Radio Magazine, together with a special two-color descriptive folder, will be mailed free upon request.

Price
\$25⁰⁰



REMLER
TWIN-ROTOR
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\$5.00 complete

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8 REMLER REASONS WHY

- 1 Reception is free from long-wave commercial station interference common in the past to ultra-sensitive receivers.
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- 5 Extraordinary Selectivity.
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- 7 Exceptionally quiet operation on both local and distant stations.
- 8 Will bring in stations which would be lost in the "noise" level on any other receiver.



REMLER
IMPROVED
SOCKET
\$.50

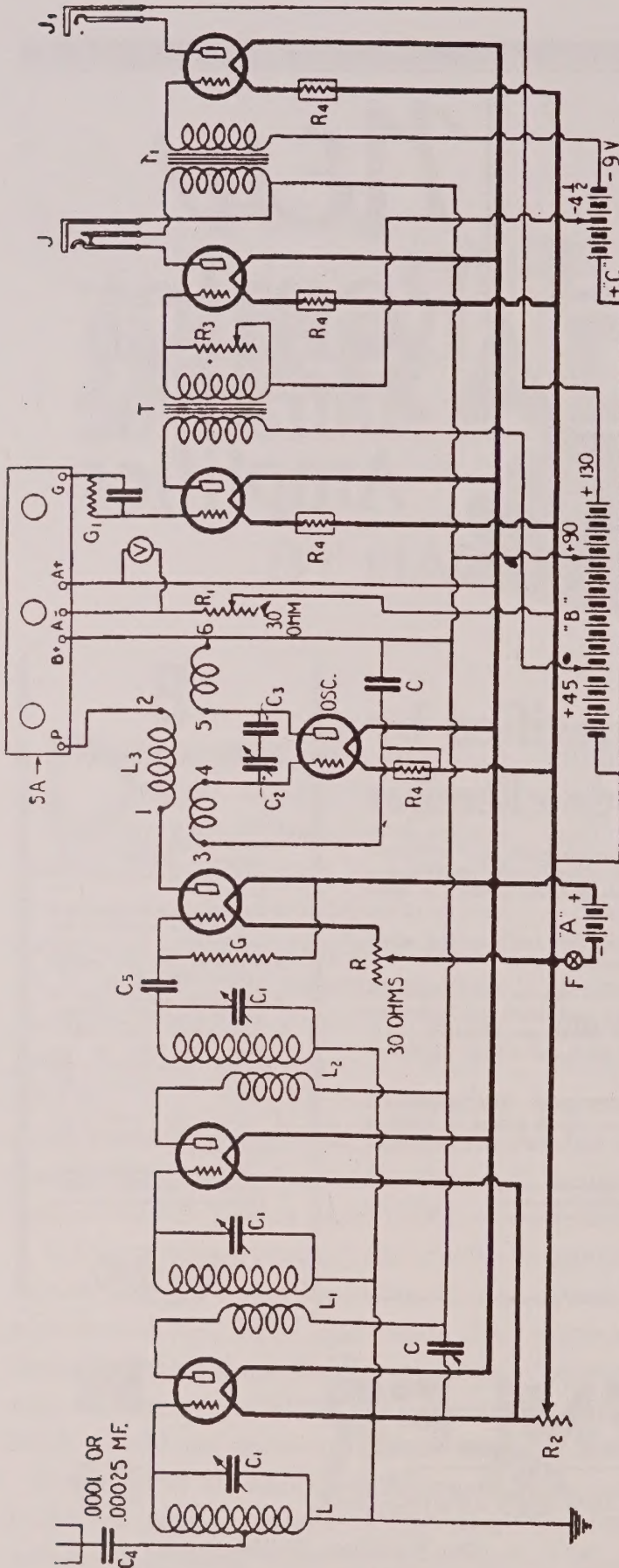


FIG. 2

part was the IF amplifier assembly, manufactured by Remler (Fig.1) Many component manufacturers, because of the Infradyne's popularity, advertised that their parts were particularly well suited for the Infradyne.

Fig. 2 is a schematic of a complete

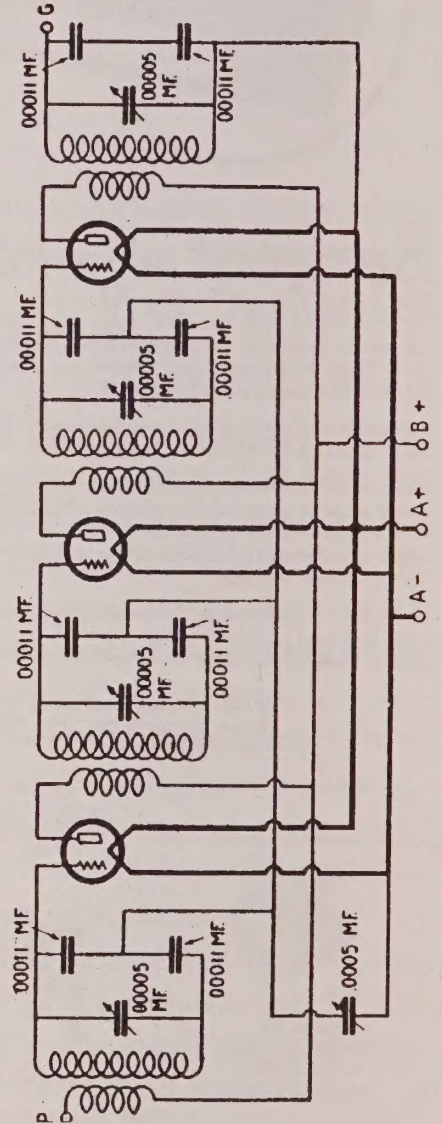


FIG. 3

Infradyne receiver and Fig. 3 is a schematic of the Remler IF assembly, which used type 199 battery tubes.

The usual practice in superheterodynes is to use the difference between the signal frequency and the oscillator frequency to produce the intermediate frequency. The Infradyne, however, uses the sum of the signal frequency and oscillator frequency. To cover the broadcast range of 550 to 1500 kHz, the oscillator tunes 2940 to 1990 kHz. The oscillator tunes "backwards". That is, the low-frequency limit of the broadcast band is tuned at the high frequency limit of the oscillator tuning range and vice versa.

The rest of the Infradyne is fairly conventional. There are two stages of tuned radio-frequency amplification and a tuned detector/mixer. These stages are gang tuned and use toroidal inductances. Toroidal inductances have very low external magnetic fields, which minimize

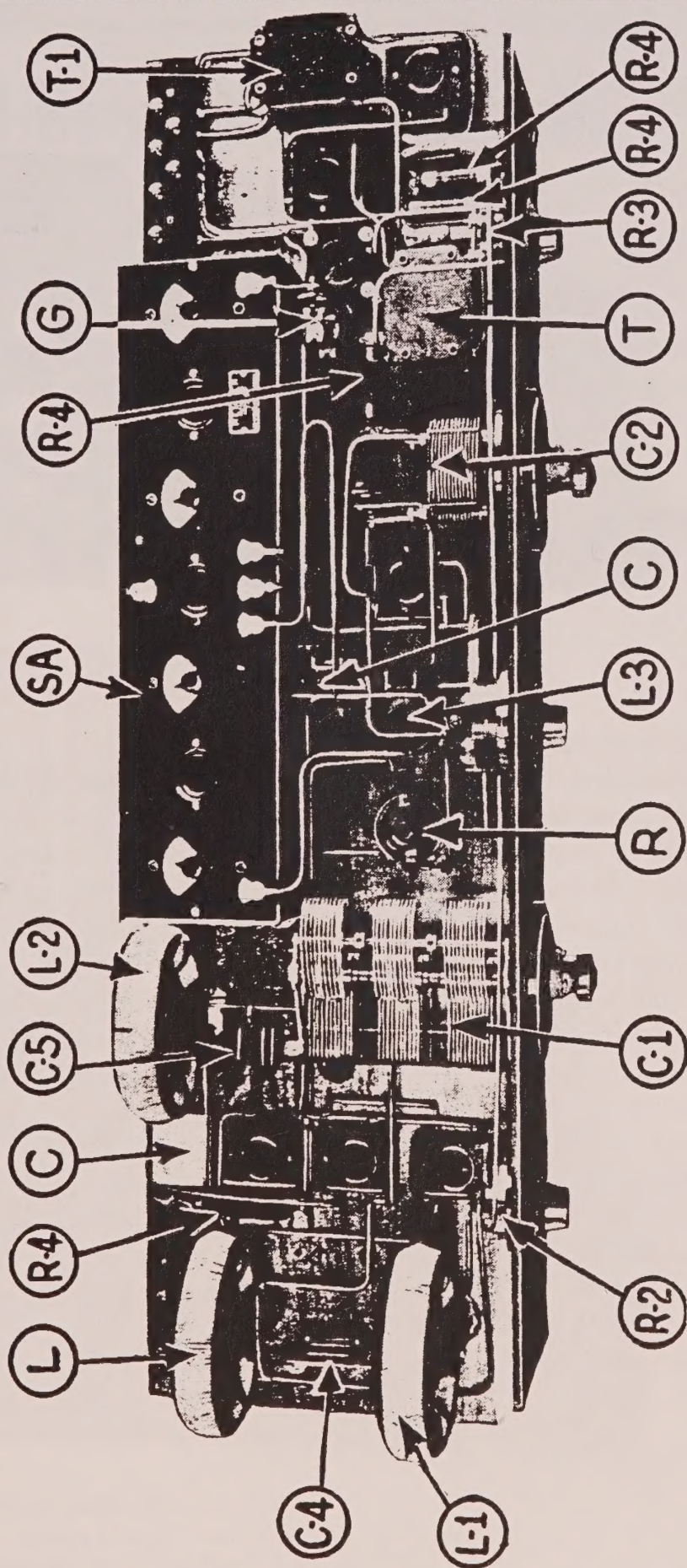


FIG. 4

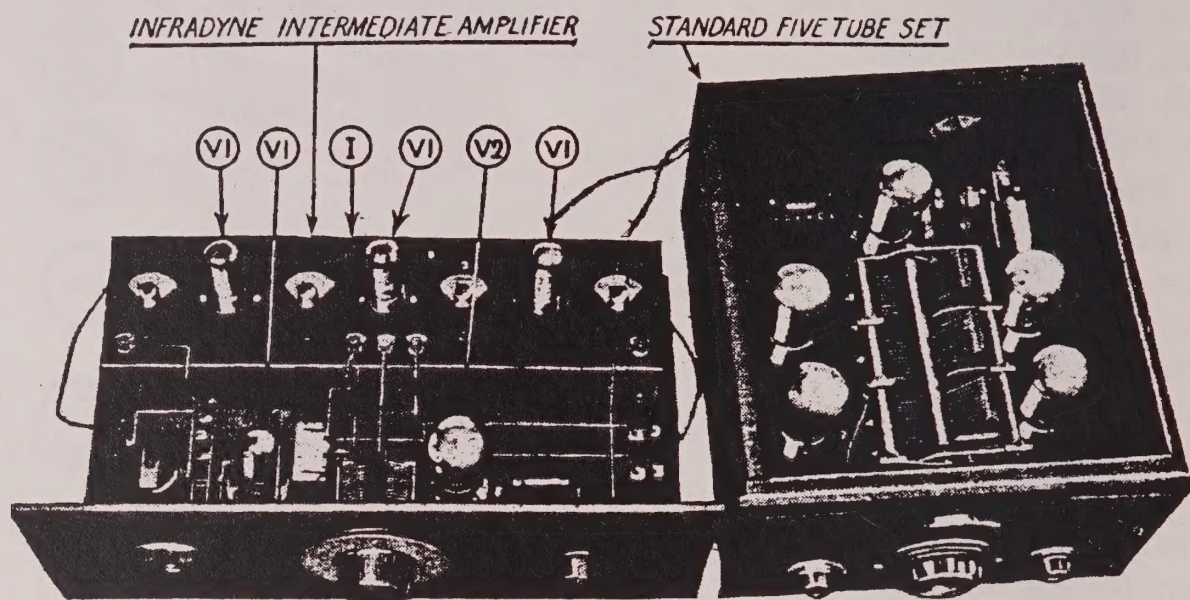


FIG. 5

undesirable interstage coupling and instability. The oscillator is coupled to the plate circuit of the detector/mixer. The IF amplifier is the Remler assembly, followed by a grid leak detector and conventional two-stage audio amplifier.

Fig. 4 is a photograph of the complete Infradyne receiver. It was possible to convert an existing TRF receiver to an Infradyne. It was necessary to break the connection between the set's normal detector and audio amplifier, connect in an oscillator and feed the result to a Remler amplifier, add a detector to the output of the Remler and feed it to the set's normal audio amplifier. Fig. 5 shows a con-

verted TRF set.

Following the initial description of the Infradyne there were articles in other magazines describing the set and its variations. Many component manufacturers featured the Infradyne in their advertisements.

Club member Clyde Watson has acquired a Remler amplifier unit and is looking for other vintage parts so that he can build a replica of the original Infradyne. ☐

RADIO TUBES AND BOXES OF THE 1920'S

The following pictures are excerpts from the book *Radio Tubes and Boxes of the 1920's*, by George A. Fathauer, published by Sonoran Publishing. The book features over 400 color photos and magazine ads of early vacuum tubes, is 112 pages in length and retails for \$26.95. It will be available after August 1, 1999, and can be pur-

chased from Sonoran Publishing, Antique Electronic Supply or George H. Fathauer. Several members of the Arizona Antique Radio Club allowed tubes from their personal collections to be photographed for the book, and a sampling of those photos appears here.



Sonatrons MU-X30, MU-X20, MU-X6, 1926

Sonatrons Tube Co., Chicago, Illinois. "Red, White, Blue" tubes shown on Sonatrons resistance-coupled amplifier. (Martin Bergan Collection)

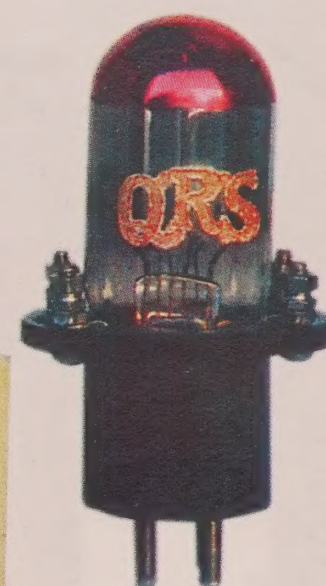
RADIO TUBES AND BOXES OF THE 1920'S



Brightson True Blue, 1925
Brightson Laboratories Inc., New York,
N.Y. Equivalent to 199. (Martin Bergan
Collection)



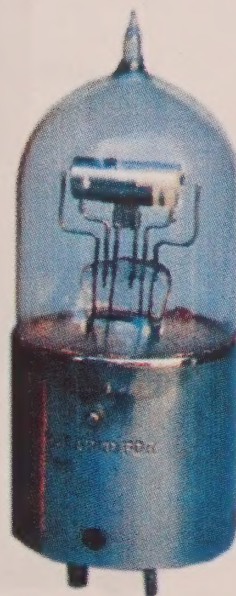
Atwater Kent 607
Atwater Kent Manufacturing Co., Philadelphia, Pa. Gas rectifier tube for use in
A.K. model R and S battery eliminators. (Dennis Craft Collection)



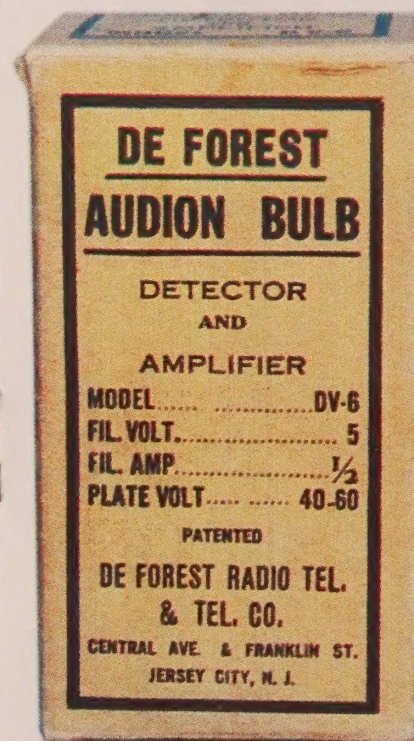
QRS Redtop Power Tube
The QRS Music Company, Chicago, Illinois (George H.
Fathauer Collection)



Zenith 24A
Zenith Radio Corporation, Chicago,
Illinois (Bill Lettow Collection)



DeForest DV-6, 1923
DeForest Radio Tel. & Tel. Co., Jersey City, N.J. (Les Rayner
Collection)



DeForest DV3A, 1925
DeForest Radio Co., Jersey City,
N.J. (George H. Fathauer
Collection)





Sylvania SX-250
Sylvania Products Co., Emporium, Pa.
(Kenneth and Debra Krol Collection)



By Heck X112A
(George A. Fathauer Collection)



CeCo AC Pentode, 1930
C.E. Manufacturing Co., Providence,
R.I. (Les Rayner Collection)



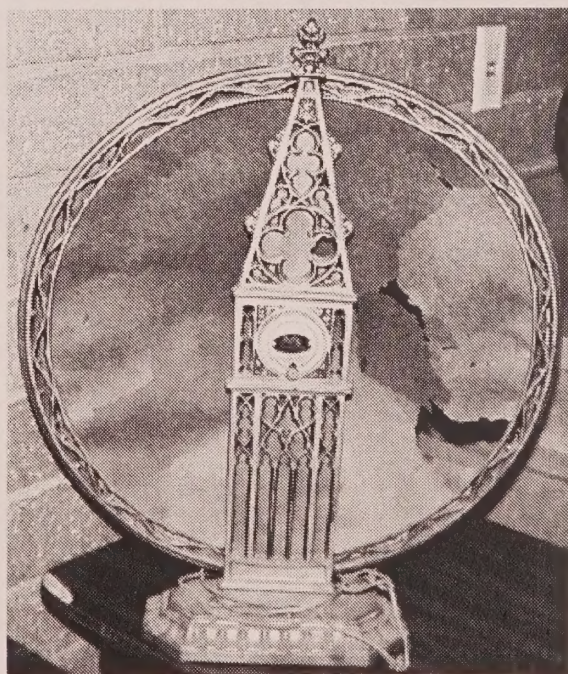
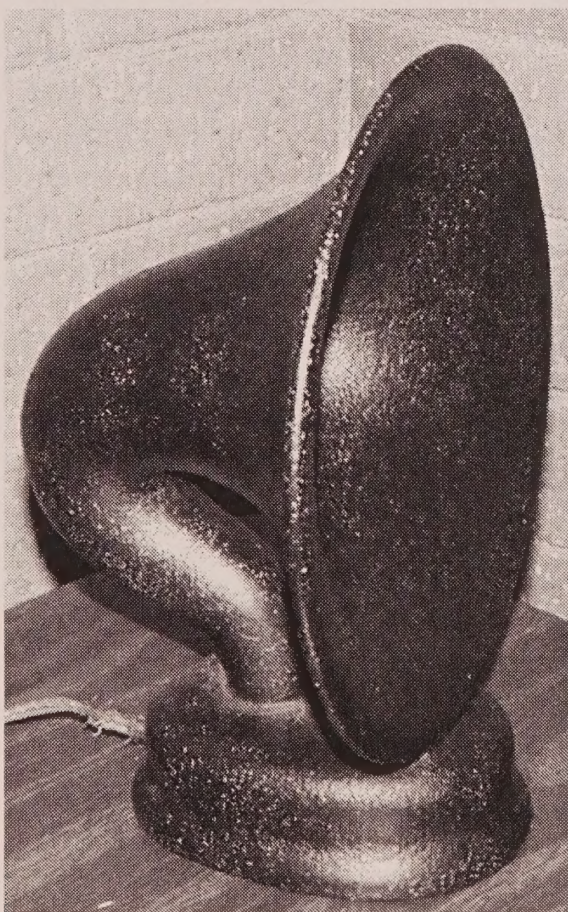
Televocal TC. 201A
Televocal Corporation, New York,
N.Y. (Clyde Watson Collection)

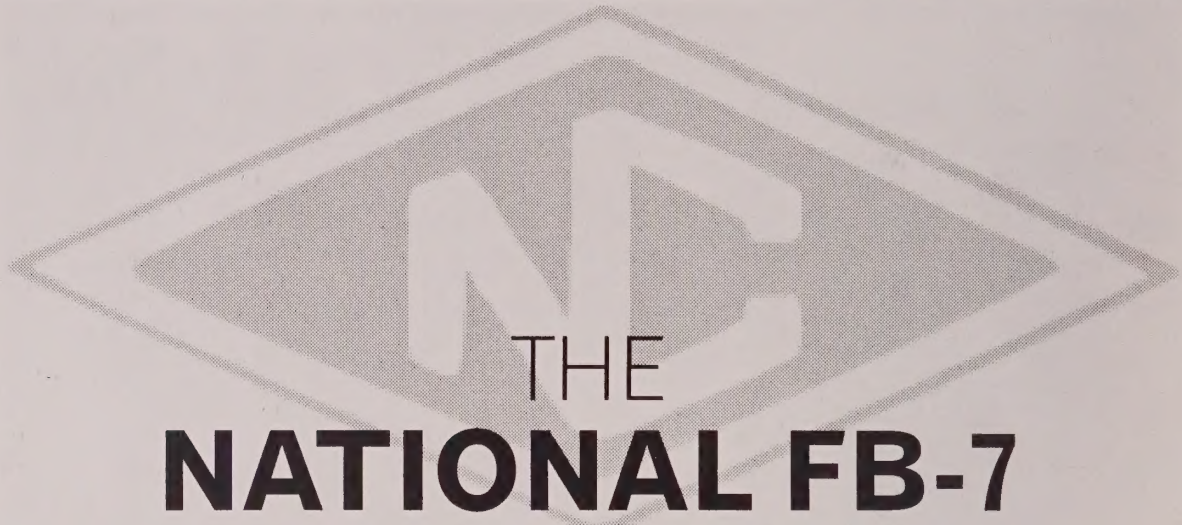


APRIL MEETING **LOUDSPEAKERS WITH CARL** **ROBERTS**

(See story on page 3.) That's Carl above with the array of speakers from old to new that he told us about.

George H. Fathauer brought the speaker below, Bob Grinder brought the ornate speakers at right.





THE NATIONAL FB-7 RECEIVER

BY HARRY HYDER

Until the early 1930s almost all amateurs used regenerative receivers. There were no short-wave superheterodynes on the market.

The first short-wave superheterodyne to appear was the Hammarlund Comet Pro of 1932. This was an eight tube set. It used plug-in coils, had no RF amplifier stage but it did have a built-in power supply. The price was a little under \$100. A later model included an optional crystal filter. The Comet Pro became fairly popular with hams.

Also appearing in 1932 was the National AGS (Fig.1). This was a state-of-the art nine tube superhet. It was designed and produced for the Airways Division of the Department of Commerce, but could be bought by others. It too used plug-in coils. It had a tuned RF amplifier stage. The power supply was external. The AGS became the standard receiver at major airports. The AGS was a little too pricey for most hams in those depression days, but a few of the more afflu-

ent hams did buy it.

National thought that there was a market for a low-priced superheterodyne for hams. The result was the FB-7 of 1933. The FB-7 had seven tubes; Fig. 2 is a front-panel view and Fig. 3 is a schematic. The FB-7 used coils that plugged in through the front panel, similarly to the AGS. The ham bands were spread over almost the entire dial. General coverage coils were also available. The price was less than \$30, but this was without coils, tubes or power supply. A ham could easily build a suitable power supply, but not the coils, which cost about \$5.50 per set for each band. The FB-7 sold well. A year later the FB-7A came out. The chief difference was that the IF transformers were tuned by air capacitors rather than the previously-used mica compression trimmers. The FBX was next, incorporating a crystal filter, which was mounted at the right side rear of the cabinet. Fig. 4 shows the interior of the FBX. These changes, of course raised the price somewhat.

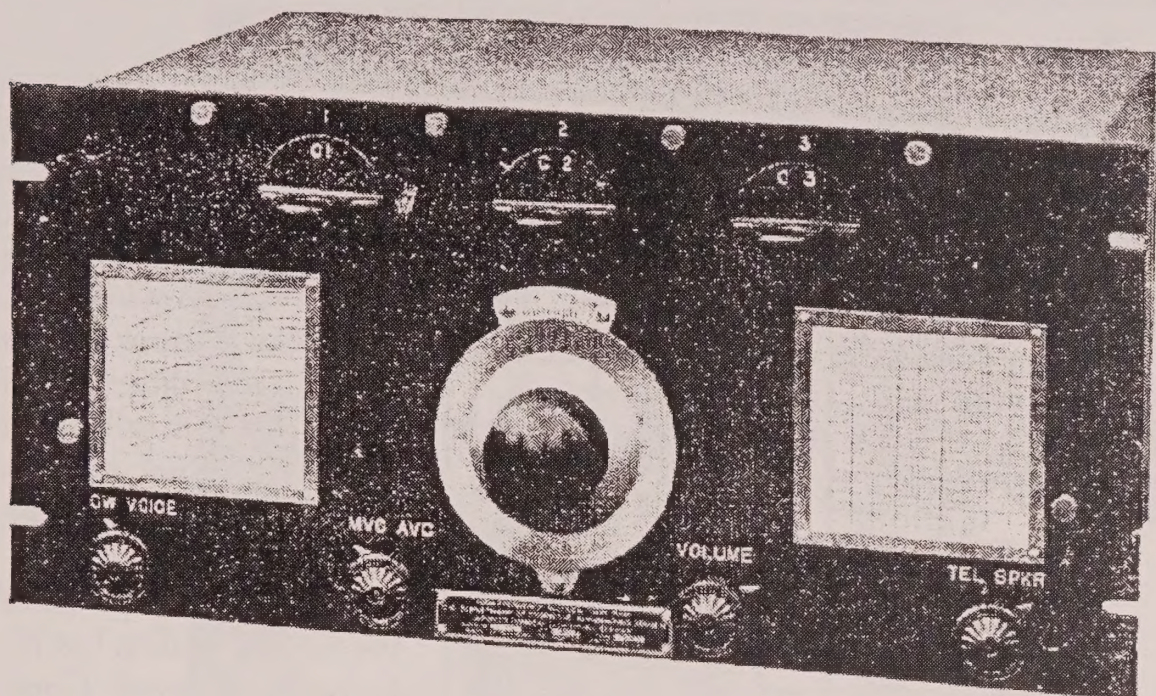


FIG. 1

A major deficiency of the FB-7 was poor image rejection because it had only one signal-frequency tuned circuit. To improve this, National brought out the PSK preselector in 1934. This could be attached to the side of the FB-7, but had to be spaced

out somewhat to permit access to the crystal filter controls on the right side rear of the cabinet. Fig. 5 shows this.

The PSK did not sell well and they are now quite rare.

Production of the FB-7 ceased in 1935. By this time there were other

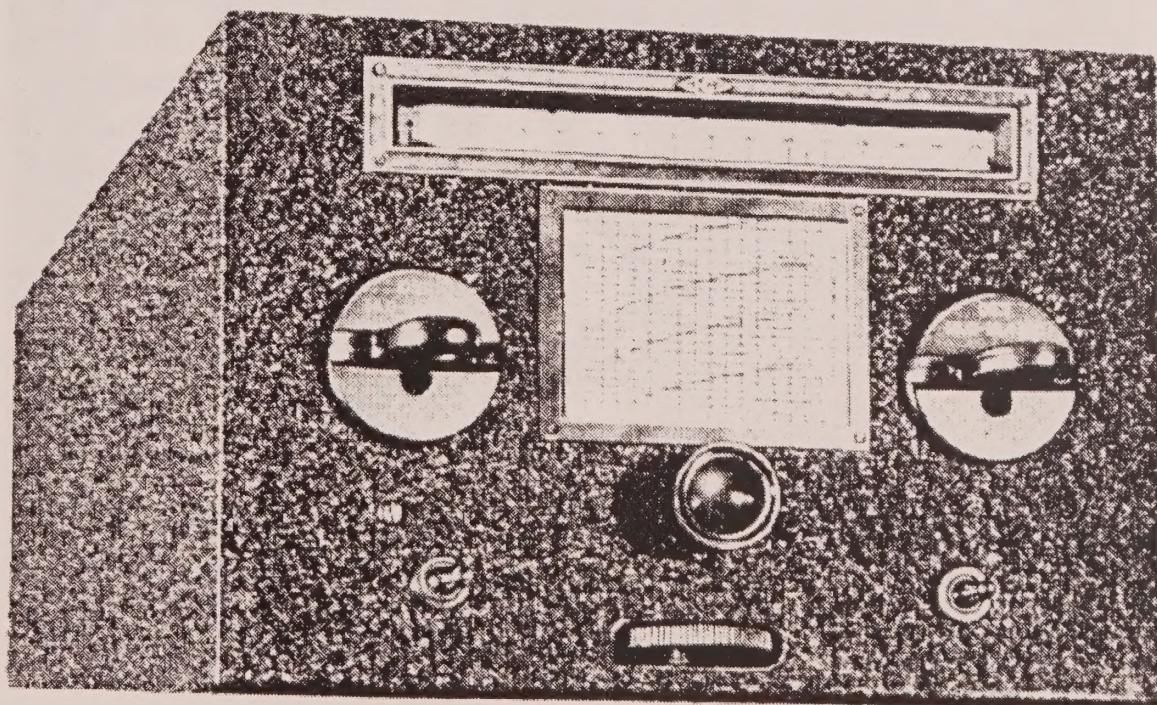


FIG. 2

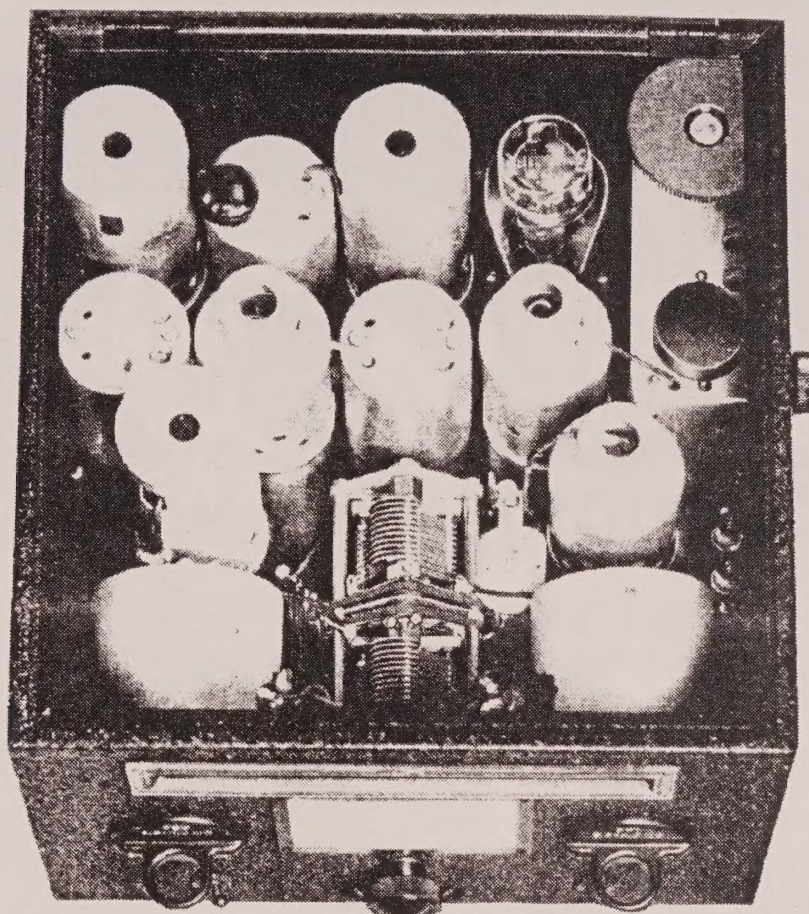


FIG. 4

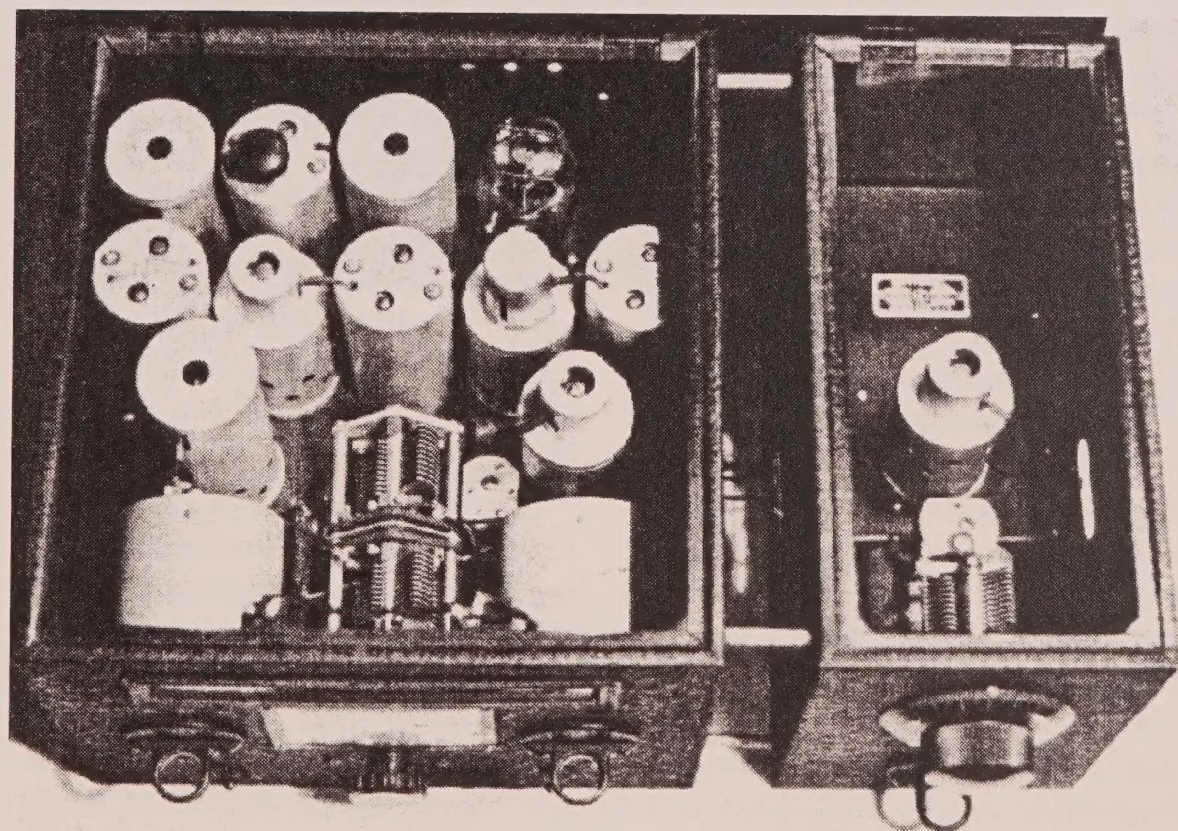


FIG. 5



*You Can Influence Others
With Your Thinking!*

The *Radio Club News* needs your contributions of articles, letters, photos and other materials of interest to members. Add a new dimension to your hobby by sharing your experiences, expertise, wisdom, common sense, opinions and observations. Here are a few ideas to get you going:

- **Collecting:** Your first radio...Great and impossible finds you have made...Tips for making finds...Tips for new collectors*...Great finds that turned sour...Tips to avoid making finds that turn sour...Interviews or visits to club members' collections.

- **Experiences:** How you got started in radio...Experiences in radio's early days...Early Arizona radio: stations, manufacturers, stores, personalities...Interviews of radio pioneers...Job experiences relating to radio.

- **Technical:** Cabinet restoration tips*...Chassis repair tips*...Great and impossible restorations...Electronics for the beginning collector*...Technical help in question and

answer format*.

- **History:** History of a set, a company or a station...Development of circuits, tubes or components ...History of a design trend, i.e. art deco ...Any aspect of radio in Arizona history especially wanted.

- **Photos:** Unusual sets ...Recent acquisitions ...Before and after shots of a restoration ...Collections or swap meets visited ...Interesting radio related places visited.

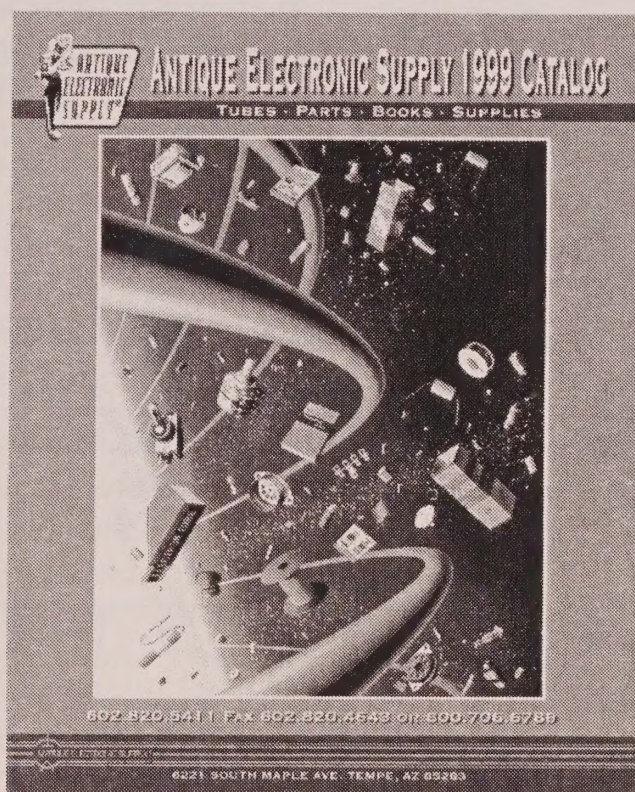
- **Comments:** The state of the hobby ...Letters to the editor ...Comments about articles seen ...Book Reviews ...Opinions about prices, Ebay or the Internet.

Items marked * can be subjects for regular features. Submissions can be typed, emailed, or on computer disk (common IBM or Mac disk sizes and formats are ok). Photos will be returned unharmed. Call or write the editor: Bill Lettow, 2025 E. LaJolla Dr., Tempe, AZ 85282. Email: lettow@yahoo.com.

When you "thought" you
had "one of those..."

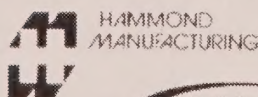
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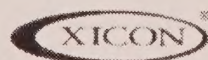


- Tubes - Audio, receiving, and industrial types in stock, including early and foreign types.
- Hard to find power transformers and filter chokes.
- Speakers, resistors, lamps, tube sockets, potentiometers, grill cloth, knobs, and vibrators.
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CLASSIFIEDS

CLASSIFIED ADS are free to members. **Please - no ads over the phone.** Send your ad to AARC, 2025 E. LaJolla Dr., Tempe, AZ, 85282. Specify how long you want your ad to run: one or more issues (specify), or until further notice.

BUSINESS CARD ADS support the club and let people know what you're looking for. An ad like the one at the bottom of this page is \$20 for one year (4 issues). Send your card and check to AARC, 2025 E. LaJolla Dr., Tempe, AZ, 85282.

FOR SALE: Used TUBES of all kinds; USED+TESTED+WARRANTY and a chance to examine the goods before payment. Such a deal! Contact DAN NELSON, (602)243-7421 (evenings), email: djn@goodnet.com

FOR SALE: Rare find, and right here in Arizona. Grigsby-Grunow Majestic Model 100A Radio-Phono in original condition. No rust, no moisture damage. Seems to be complete. \$200 now. \$250 next issue. DENNIS

CRAFT, 10513 E Clinton, Scottsdale, AZ 85259; 480-860-8951; dcraft@uswest.net

WANTED: Edison Ticker Tape machines or the square ones made by ACE Electric. Also speaker horn for model E - Edison standard phonograph. Also Ballast tubes D-110 or D-105. CECIL HOOPER, 242-4284.

ANTIQUe TUBES bought and sold. Includes brass base 201s and earlier and uncommon radio and transmitting tubes. GEORGE H. FATHAUER, 921-9961. See <http://members.home.net/fathauer>.

FOR SALE: Zenith 6-S-632. (1942) Large table top radio. Original finish with some scratches, etc., on top but very nice and very clean. New capacitors. Station and tone buttons. Excellent sensitivity and very good sound. Bunis: \$55.00--Stein: \$90.00. Asking \$85.00/offer/trade. KEN AND DEBBIE KROL, 866-2786 or djkrol@earthlink.net.

WANTED: "Tom Thumb" radios made by the Automatic Radio Company. All models. GEORGE A. FATHAUER, 116 N. Roosevelt, Suite 121, Chandler, AZ, 85226, 961-5176.

WANTED: Top quality signal generator, in working condition with manual. RICK MOUNTJOY, 926-8174.



Dennis E. Craft

10513 E. Clinton St.
Scottsdale, AZ 85259
(602) 860-8951

Collector of
ATWATER KENT
Artifacts

CLASSIFIEDS

HI! I'm looking for a schematic for a GE X216A table top wood cabinet radio, possibly a 1948-49 model. Also need a ballast tube (RR7013). This radio has "Made in the USA" on the back, but also Spanish writing below. Call 439-5955, if not home leave a message. Thanks, STEVEN STRAPACH.

WANTED: Radio Premiums. Rings, paper, badges, etc. from Tom Mix, Lone Ranger, Orphan Annie, Amos 'n Andy, etc. LARRY STENCEL, 9176 N. 115th Pl., Scottsdale, 85259, 661-6722.

DAVE'S ANTIQUES in Tucson always has over 500 radios in stock. Buy-Sell-Trade. 3210 S. Dodge #11, Tucson, (520) 790-2618.

FOR SALE: Crys Tech Report No. 11 on mineral properties is available for \$11 postpaid from Crys Tech, c/o P.A. KINZIE, 530 Topeka St., Kingman, AZ 86401.

SERVICE OFFERED: Expert radio cabinet repair and refinishing to original appearance. MARK TOPPO, 439-3556.

TUBE COLLECTOR'S ASSOCIATION FORMED. This new group is now in operation. Started by dedicated collector/historians, it is international in scope, nonprofit, and non-commercial. It addresses tubes of all vintages and types. For a membership application and sample copy of *Tube*

Collector, please contact the club at P.O. Box 1181 Medford, OR 97501. Details are also available from AL JONES, W1ITX, (707) 464-6470 or LUDWELL SIBLEY (541) 855-5207.

WANTED: Silver Marshall audio transformers Models 220 and 221 to complete an early superheterodyne project. Also need a three-gang variable condenser, a Cardwell 317-CL or a Remler type 33. CLYDE WATSON, 8311 Via de Sereno, Scottsdale, 85258, 948-6466, clydelois@earthlink.net.

BOB'S - BUY, SELL, REPAIR ANTIQUE RADIOS. Located in Recliner City Store, 506 E. Ft. Lowell, Tucson, 85705. (520) 623-7901

SERVICE OFFERED: If you have a problem that you can't fix I'll take it on. Tube type receivers and audio equipment only. GEORGE H. FATHAUER, Arizona Tube Audio, 688 W. 1st St., Tempe, 921-9961.



PHILCO Collector

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KG7ZX

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